COVERED SOURCE PERMIT REVIEW
COVERED SOURCE PERMIT NO. 0054-01-C
Permit Application for Modification No. 0054-09

Applicant: Hawaiian Commercial & Sugar (HC&S) Company

Facility: Puunene Sugar Mill

Location: Puunene, Maui
UTM: 764,528 m east, 2,309,899 m north (Zone 4, NAD-27)

SIC Code: 2061 (Cane Sugar) & 4911 (Electrical Services)

Mailing Address: P.O. Box 266
Puunene, Maui, HI 96784

Contact	Name	Title	Phone & E-Mail Address
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1. BACKGROUND

Hawaiian Commercial & Sugar (HC&S) Company operates Puunene Sugar Mill, a sugar cane cleaning and processing facility in Puunene, Maui, Hawaii. Puunene Sugar Mill primarily produces raw sugar from sugar cane as well as generates approximately forty-six (46) MW of electric power some of which is sold to Maui Electric Company.

Equipment at the Puunene Sugar Mill consists of sugar cane cleaning and processing equipment, storage and handling equipment, steam and electrical processing equipment, maintenance and repair equipment, and miscellaneous emergency and support equipment. Among these equipment, two (2) 212 MMBTU/hr biomass/oil/coal boilers (Boiler 1 and Boiler 2) with multicyclone and Venturi wet scrubber system, one (1) 568 MMBTU/hr biomass/oil/coal boiler (Boiler 3) with multicyclone and Venturi wet scrubber system, one (1) 20,000 lb/hr rotary sugar dryer with wet scrubber, and eight (8) diesel engines are permitted by the existing Covered Source Permit (CSP) 0054-01-C issued on November 3, 2015.

On November 30, 2015, HC&S submitted an application of administrative amendment for current CSP 0054-01-C to correct various errors and omissions. On December 30, 2015, they filed an application for Minor Modification to the current CSP. This permit modification will address both applications.

HC&S Proposed Modifications:

HC&S has submitted an application for minor modification to combine the storage of specification (spec) used oil for all the boilers permitted in existing CSP No. 0054-01-C. The existing permit requires spec used oil for Boiler 3 shall be stored in separate tanks from spec used oil for Boilers 1 and 2 due to the allowable sulfur content of spec used oil burned in Boilers 1 and 2 (0.75% by weight) which is different from that in Boiler 3 (0.5% by weight). Before the current permit was issued, HC&S had ceased accepting any spec used oil with a sulfur content greater than 0.5% and has submitted an application for significant modification that included a proposed reduction in the sulfur limit on spec use oil burned in Boilers1 and 2 to 0.5% by weight, equal to the existing limit on spec used oil burned in Boiler 3.

The proposed modification meets the criteria for minor modification as defined in HAR §11-60.1-81. There are no increases in emissions due to the proposed operation of the facility. There are also no changes to existing monitoring, reporting, or recordkeeping requirements.

2. EQUIPMENT DESCRIPTION

Unit	Equipment Description
Boilers 1 and 2, Stack 1	Two (2) Riley Stoker steam boilers, model number RX-29. Each bagasse-fueled steam boiler provides power to any of the three (3) turbine generators at 212 MMBtu/hr bagasse heat input
Boiler 3, Stack 2	Foster Wheeler Spreader Stoker steam boiler, model number RX-41-WW. This bagasse-fueled steam boiler provides power to two (2) of the turbine generators at 568 MMBtu/hr bagasse heat input
Scrubbers	Two (2) Venturi wet scrubber systems, one on each stack
Multi-cyclones	Four (4) multi-cyclone dust collectors, one each on Boilers 1 and 2, and two (2) on Boiler 3
Dryer	20,000 lb/hr Rotary Sugar Dryer with Entoleter Model 0405 wet scrubber
Emergency RICE's	One (1) 355 hp diesel engine generator, located at the Puunene Sugar Mill; One (1) secondary 280 hp fire pump diesel engine, located at the Puunene Sugar Mill; One (1) 107 hp diesel engine, located at the Kaheka Hydroelectric Plant, which is approximately 6.5 miles from the Puunene Sugar Mill; and One (1) secondary 133 hp fire pump diesel engine located at the old Paia Sugar Mill (presently closed), which is approximately six (6) miles from the Puunene Sugar Mill.

3. AIR POLLUTION CONTROLS

The three (3) boilers are equipped with wet scrubber systems and multi-cyclone dust collectors for particulate emission control.

4. APPLICABLE REQUIREMENTS

4.1. Hawaii Administrative Rules (HAR)

Chapter 11-59, Ambient Air Quality Standards
Chapter 11-60.1 Air Pollution Control
- Subchapter 1, General Requirements
- Subchapter 2, General Prohibitions
  - 11-60.1-31 Applicability
  - 11-60.1-32 Visible Emissions
  - 11.60.1-33 Fugitive Dust
  - 11-60.1-36 Biomass Fuel Burning Boilers
  - 11-60.1-38 Sulfur Oxides from Fuel Combustion
- Subchapter 5, Covered Sources
- Subchapter 6, Fees for Covered Sources, Noncovered Sources, and Agricultural Burning
  - 11-60.1-111 Definitions
  - 11-60.1-112 General Fee Provisions for Covered Sources
  - 11-60.1-113 Application Fees for Covered Sources
  - 11-60.1-114 Annual Fees for Covered Sources
  - 11-60.1-115 Basis of Annual Fees for Covered Sources
- Subchapter 8, Standards of Performance for Stationary Sources
  - 11-60.1-161 New Source Performance Standards
- Subchapter 9, Hazardous Air Pollutant Sources
- Subchapter 10, Field Citations

4.2. Department of Health (DOH) In-house Annual Emissions Reporting

DOH requests annual emissions reporting from those facilities that have facility-wide emissions exceeding in-house reporting levels and for all covered sources. Annual emissions reporting is required because this facility is a covered source and potential emissions from the facility do exceed the reporting thresholds as shown in the table below:

Pollutant	Potential Emissions (TPY)	DOH Reporting Levels (TPY)
CO	**11,586**	250
NO_X	**1,559**	25
SO_2	**1,411**	25
PM	**697**	25
PM-10	**697**	25
PM-2.5	**697**	-
VOC	**466**	25
HAP	**206**	5

4.3. Requirements for Preparation, Adoption, and Submittal of Implementation Plans, 40 CFR Part 51

Subpart A — Air Emission Reporting Requirements (AERR)

AERR determines the annual emissions reporting frequency based on the potential emissions (with the exception of lead, which is based on actual emissions) of each pollutant from the facility that emits at or above the triggering levels. As shown in the table below, potential emissions from the facility is beyond the trigger levels and thus, the facility is subject to annual emission reporting under AERR as a type A source.

Pollutant	Potential Emissions (TPY)	AERR Triggering Levels (TPY)	
		1 year cycle (type A sources)	3 year cycle (type B sources)
CO	**11,586**	2500	1000
NO_X	**1,559**	2500	100
SO_2	**1,411**	2500	100
PM	**697**	-	-
PM-10	**697**	250	100
PM-2.5	**697**	250	100
VOC	**466**	250	100

4.4. New Source Performance Standards (NSPS), 40 Code of Federal Regulations (CFR) Part 60

Subpart A — General Provisions
Subpart D — Standards of Performance for Fossil-Fuel Fired Steam Generators

Boiler 3 is subject to this standard.

4.5. National Emission Standards for Hazardous Air Pollutants for Source Categories (Maximum Achievable Control Technology (MACT)), 40 CFR Part 63

Subpart ZZZZ — National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

The five (5) emergency engines, including two engine generators, can be exempted from the requirements to obtain an air permit but are subject to and they must operate in accordance with §63.6640 (f)(2) of Subpart ZZZZ.

Subpart DDDDD — National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters

All three (3) boilers are subject to this standards because the facility is a major source of HAP emissions.

5. NON-APPLICABLE REQUIREMENTS

5.1. Prevention of Significant Deterioration (PSD), 40 CFR 52.21

PSD review applies to new major stationary sources and major modifications to these types of sources. This facility is not subject to PSD review because it is an existing major stationary source as defined and listed in HAR Title 11, Chapter 60.1, Subchapter 7, and 40 CFR Part 52, §52.21, for any single air pollutant and the proposed modification will not cause significant increases in emissions.

5.2. New Source Performance Standards (NSPS), 40 Code of Federal Regulations (CFR) Part 60

Subpart Da — Standards of Performance for Electric Utility Steam Generating Units
Subpart Db — Standards of Performance for Industrial-Commercial-Institutional team Generating Units
Subpart Dc — Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

Boilers 1 and 2 are not subject to 40 CFR Part 60 Subparts D, Da, Db, and Dc because the boilers were constructed prior to the applicability trigger date of the subparts.

5.3. National Emission Standards for Hazardous Air Pollutants (NESHAPS), 40 CFR Part 61

The facility is not subject to any NESHAPS requirements because although the HAPs are listed, the process or production which heats the boilers are not listed as a standard in this subpart.

5.4. National Emission Standards for Hazardous Air Pollutants for Source Categories (Maximum Achievable Control Technology (MACT)), 40 CFR Part 63

Subpart UUUUU — National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units

The boilers are not subject to this standard because they burn at least ten (10) percent biomass (bagasse) and are subject to subpart DDDDD.

5.5. Compliance Assurance Monitoring (CAM), 40 CFR Part 64

The purpose of Compliance Assurance Monitoring (CAM) is to provide a reasonable assurance that compliance is being achieved with large emissions units that rely on air pollution control device equipment to meet an emissions limit or standard. Although the three boilers meet the following criteria defined in 40 CFR §64.2: (1) be located at a major source; (2) be subject to an emissions limit or standard; (3) use a control device to achieve compliance; and (4) have potential pre-control emissions that are one hundred percent (100%) of the major source level, this facility is not subject to CAM because it qualifies for the exemptions defined in §64.2.(b) - a continuous emission monitoring system (CEMS) is used to determine compliance with the emission limits.

5.6. Best Available Control Technology (BACT)

A BACT analysis is required for new sources or modifications to sources that have the potential to emit or increase emissions above significant levels considering any limitations as defined in HAR, Section 11-60.1-1. This facility is not subject to a BACT analysis because it is an existing major stationary source as defined and listed in HAR Title 11, Chapter 60.1, Subchapter 7 and 40, CFR Part 52, §52.21, for any single air pollutant and the proposed modification will not cause significant increases in emissions.

5.7. Synthetic Minor Source

This facility is a major stationary source, not a synthetic minor source as defined in HAR 11-60.1-1, which is potentially major, but is made non-major through federally enforceable permit conditions.

6. INSIGNIFICANT ACTIVITIES/EXEMPTIONS

Insignificant activities identified by the applicant that meet the exemption criteria specified in HAR §11-60.1-82(f) and (g) are listed as follows:

Basis for Exemption	Description
§11-60.1-82(f)(1)	1. Liquid fuels for the boilers and the Puunene Mill mobile equipment are stored in above ground storage tanks on the Puunene Mill grounds. The above ground storage tanks range from 250 to 25,000 gallons, and contain propane, diesel, specification used oil, and gasoline. Lubricants, hydraulic fluids, and other petroleum products are also stored in various tanks. (See the April 2007 application Table A-1R[1] for capacities and contents, and Tables A-1R and A-2R[1] for locations.) 2. Fuel dispensers for Puunene Mill vehicles are: a. Gasoline dispensers are located adjacent to the eastern end of Tank PU-31 (see Figure A-2R in the April 207 application) and consist of two Gasboy dispensers, each with two (2) hoses and a nozzle on each hose; b. One Gasboy low sulfur on-road diesel dispenser is adjacent to Tank PU-41, and has two (2) one-inch (1-inch) hoses and a nozzle on each hose; and c. Two (2) Gasboy off-road diesel dispensers are located southeast of the cane hauler shop, and each has two (2) two-inch (2-inch) hoses with an OPW nozzle on each hose.
§11-60.1-82(f)(2)	1. Oil fired water heater pressure washer located at Tractor Shed wash rack (Landa Model EOF6-3000, 0.558 MMBtu/hr) 2. Oil fired water heater located at Cane Truck Stop wash rack (Hotsy Model 5830A, 0.98 MMBtu/hr) 3. Motor-burnout oven (0.625 MMBtu/hr)

§11-60.1-82(f)(3)	1. LPG fired water heater located at HSPA Experiment Station (RECO LP Gas Model #3XA-505-80T, 0.505 MMBtu/hr input) 2. 0.625 MMBtu/hr BAYCO propane (LPG)-fired heat cleaning oven, Motor Shop
§11-60.1-82(f)(5)	Temporary diesel generators operated during annual facility power outage for maintenance
§11-60.1-82(f)(6)	Spray paint booths
§11-60.1-82(f)(7)	1. Wood fired refractory curing within boilers 2. Fuel and material storage piles 3. Lime Handling System and Pellet Lime Slaker, and storage bin 4. Sugar granulator 5. Sugar cooler 6. Sixty-three (63) hp and eighty (80) hp portable diesel fired air-compressors, Construction Shop 7. Twenty-two (22) hp portable diesel fired pressure washer, Tractor Shop 8. Various portable diesel fired welding machines, electric generators, air compressors, and other industrial equipment less than 143 hp used for maintenance and repairs 9. Forty (40) hp Jet-Crete portable gasoline-fired gunite machine, Construction Shop 10. Solvent cleaning and degreasing 11. Electrical varnish dip tank 12. Mixing of powdered herbicides 13. Seed treatment dip tanks 14. Bagacillio collection and transfer systems 15. One (1) 50 HP diesel-fired air compressor located at the Kamaole Weir forebay 16. One (1) 44 HP Screen-All soil screener diesel engine 17. One (1) 33 HP Vibro-Sreen soil screener diesel engine
§11-60.1-82(g)(1)	Various welding booths (5) in mill industrial shops
§11-60.1-82(g)(2)	Hand held equipment for maintenance and testing purposes, with reasonable precautions taken to prevent particulate matter from becoming airborne
§11-60.1-82(g)(6)	Secondary fire pump (280 HP)
§11-60.1-82(g)(9)	Plant maintenance and upkeep activities, such as painting, sandblasting, woodworking, painting, etc.
§11-60.1-82(g)(12)	Stacks and vents to prevent escape of seer gases through plumbing traps

7. ALTERNATE OPERATING SCENARIOS

The permittee may replace the diesel engine or diesel engine generator with a temporary replacement unit of similar size with equal or lesser emissions if any repair reasonably warrants the removal of diesel engine or diesel engine generator from its site (i.e., equipment failure, overhaul, or any major equipment problems requiring maintenance for efficient operation).

8. PROJECT EMISSIONS

The majority of the emissions from the facility results from the operation of the three (3) steam boilers. The criteria pollutants are nitrogen oxides (NO_x), sulfur dioxides (SO_2), carbon monoxide (CO), volatile organic compounds (VOC), and particulate matter ten (10) microns or less in size (PM/PM_{10}). Non-criteria pollutants include arsenic, benzene, beryllium, fluorides, lead, and mercury. All of these non-criteria pollutants except benzene would result only from traces of these elements in the boiler and internal combustion engine fuels. Benzene emissions are a fraction of non-methane hydrocarbon emissions, which may result from either combustion or evaporation sources.

The operation modification of combining the storage of spec used oil for all three (3) boilers proposed by the applicant won't cause increases in the emissions of the facility.

With the exception of annual source performance stack testing, the three (3) boilers do not normally fire one-hundred (100) percent fuel oil or specification used oil. The oil is normally used as a supplement to burning bagasse. To determine annual emissions from the boilers, emissions from each allowable combination of fuels was considered. The possible fuel combinations take into consideration permit conditions which require a minimum of fifty (50) percent of the total annual heat input to the boilers to be biomass. In the cases where the maximum emission rate is derived from a fossil fuel, annual emissions are determined by multiplying the emission factors for both fuel oil and bagasse by the appropriate hours of operation. The April 2007 application maximum potential to emit hazardous air pollutants for coal for Boilers I and 2 are based on 54,680 tons per year and Boiler 3 is based on 45,000 tons per year. The following table summarizes emissions of the facility based on the review for current permit issued on November 3, 2015, by which detailed emission information and calculation can be referenced.

MAXIMUM POTENTIAL EMISSIONS (ton per year)						
EMISSION SOURCE	NO_X	SO_X	CO	NMHC	PM/ PM_{10}	HAPs
Boilers 1 and 2	679	730	7,830	407	479	130
Boiler 3	880	693	3,757	60	212	76
Sugar Dyer					5.5	
Totals	1,559	1,411	11,586	466	697	206

9. AIR QUALITY ASSESSMENT

No ambient air quality analysis is required since the proposed change is not a significant modification and there is no increase in the calculated emissions. The AAQA performed for existing permit issued on November 3, 2015, is still valid.

10. SIGNIFICANT PERMIT CONDITIONS

The updated permit conditions consist of the following (additions are underlined, and deletion are marked with strikethrough):

1. Revise Attachment IIA, Special Condition No. D.4.c, e, and j:

    c. For in-house facility specification used oil, the used oil shall consist of lubricating oil, diesel fuel, kerosene, hydraulic oils, grease, and non-PCB transformer mineral oil. ~~Boiler 3 shall only burn in-house provided used oil.~~

    e. For each batch of commercially obtained specification used oil received ~~for Boiler 1 and 2~~, HC&S shall obtain a report of analysis of a representative sample of the specification used oil conducted by an independent, qualified laboratory, including at a minimum, all of the constituents/properties for which limits are indicated in Table 2. Specification used oil received from commercial sources shall not be blended with in-house facility specification used oil unless both batches of oil have been tested and meet the requirements of Table 2. Boilers ~~1 and 2~~ 1, 2 and 3 may burn commercially or in-house used oil.

    Reason: Delete erroneous language, and update the associated language correspondingly.

    ~~j. Specification used oil for Boiler 3, shall be stored in separate tanks from specification used oil for Boilers 1 and 2.~~

    Reason: Allow to combine the storage of spec used oil for three (3) boilers.

2. Revise Attachment IIA, Special Condition No. E.3.a:

    a. The permittee shall install, operate, and maintain a weighing system for the measurement and recording of the weight of all specialty sugar produced in the food grade production line that is dried in the 20,000 lb/hr sugar dryer. Maintenance of the weighing system shall include regular calibration. Upon issuance of this permit, within sixty (60) days, the permittee shall submit copies of the measurement and records of the specialty sugar produced and dried in the 20,000 lb/hr sugar dryer during the busiest month of the year and a description of the sugar weighing procedure to the Department.

    Reason: Language added for clarification. Part of the specialty sugar are processed through the granulator which is exempted from current permit. Only those processed in the 20,000 lb/hr dryer are subject to this condition.

3. Revise Attachment II, Special Condition No. F.8 and 11:

    8. The permittee shall report within five (5) ~~calendar~~ business days any deviations from permit requirements, including those attributable to upset conditions, the probable cause of such deviations and any corrective actions or preventative measures taken. Corrective actions may include a requirement for additional stack testing or more frequent monitoring, or could trigger implementation of a corrective action plan.

    Reason: Correct erroneous language.

    11. The permittee shall submit semiannually the following written report(s) to the Department. Each report shall be submitted within sixty (60) days after the end of each semi-annual reporting period (January 1 - June 30 and July 1 - December 31) and shall include the following:

        a-g: not changed.

        f. Boilers 1, 2 and 3 fuels

            The following enclosed forms shall be used for reporting, and shall be signed and dated by a responsible official:

            Monitoring/Annual Emissions Report Form: Boilers 1 and 2 Bagasse
            Monitoring/Annual Emissions Report Form: Boiler 3 Bagasse
            Monitoring/Annual Emissions Report Form: Boilers 1 and 2 Coal
            Monitoring/Annual Emissions Report Form: Boiler 3 Coal

    Reason: Add the omitted condition.

4. Revise Attachment III, Section 1.a:

    a. Within **~~sixty (60)~~ one-hundred twenty (120) days** after the end of each calendar year; and

    Reason: Correct erroneous language.

5. Not revise Attachment IIB, Special Condition No. A.1, Section B, No. C.3 and C.4, as requested by the applicant.

    Reason: The applicant has notified the CAB of permanent discontinuance of the operation of the four (4) engines and existence of extra three (3) diesel engines listed in the application of administrative amendment. The permanent discontinuance of the use of these equipment will not impact the compliance with the current permit. The three (3) additional engines has been determined to be insignificant activities and hence to be exempted from current permit.

All other permit conditions of CSP No. 0054-01-C, issued on November 3, 2015, shall not be affected and shall remain valid.

11. CONCLUSION AND RECOMMENDATION

HC&S has submitted an application for a minor modification to combine the storage of spec used oil burnt in three (3) boilers to its permit and requested administrative amendment to correct errors and omissions in current permit. There will be no increase in emissions.

Recommend issuance of the covered source permit subject to the incorporation of the significant permit conditions and forty-five (45) day Environmental Protection Agency review period.

Chenyan Song
July 7, 2016